Listing of Claims

1.(currently amended) A method for desulfurizing a hydrocarbon fuel stream so as to convert the hydrocarbon fuel stream into a low sulfur content fuel, which low sulfur content fuel is suitable for use in an internal combustion engine, said method comprising the steps of:
a) providing a nickel reactant desulfurization station which is operative to convert sulfur contained in organic sulfur compounds contained in the fuel stream to nickel sulfide;
b) maintaining said nickel reactant desulfurization station at a temperature in the range of about 300ºF to about 450ºF;
b) c) introducing a hydrocarbon fuel stream which contains an oxygenate into said nickel reactant desulfurization station; and
c) d) said oxygenate being present in said fuel stream in an amount which is effective to provide an effluent fuel stream at an exit end of said nickel reactant station which effluent fuel stream contains no more than about 0.05 ppm by weight sulfur.

2.(original) The method of Claim 1 wherein the oxygenate is selected from the group consisting of water, alcohol, ether, and mixtures thereof.

3.(original) The method of Claim 2 wherein the oxygenate is selected from the group consisting of water, MTBE, ethanol, methanol, and mixtures thereof.

4.(original) The method of Claim 1 wherein said hydrocarbon fuel is gasoline.

5.(original) The method of Claim 1 wherein said hydrocarbon fuel is diesel fuel.

6.(currently amended) A method for desulfurizing a gasoline or diesel fuel stream so as to convert the gasoline fuel stream into a low sulfur content fuel, which low sulfur content fuel is suitable for use in an internal combustion engine, said method comprising the steps of:
a) providing a nickel reactant desulfurization station which is operative to convert sulfur contained in organic sulfur compounds contained in the fuel stream to nickel sulfide;
b) maintaining said nickel reactant desulfurization station at a temperature in the range of about 300ºF to about 450ºF;
b) c) introducing a gasoline or diesel fuel stream which contains an oxygenate into said nickel reactant desulfurization station; and
c) d) said oxygenate being present in said fuel stream in an amount which is effective to provide an effluent fuel stream at an exit end of said nickel reactant station which effluent fuel stream contains no more than about 0.05 ppm by weight sulfur.

7.(original) The method of Claim 5 wherein the oxygenate is selected from the group consisting or water, alcohol, ether, and mixtures thereof.

8.(original) The method of Claim 7 wherein the oxygenate is selected from the group consisting of water, MTBE, ethanol, methanol, and mixtures thereof.

9.(currently amended) A method for desulfurizing a gasoline or diesel fuel stream so as to convert the fuel stream into a low sulfur content fuel, which low sulfur content fuel is suitable for use in an internal combustion engine, said method comprising the steps of:
a) providing a nickel reactant desulfurization station which is operative to convert sulfur contained in organic sulfur compounds contained in the fuel stream to nickel sulfide;
b) maintaining said nickel reactant desulfurization station at a temperature in the range of about 300ºF to about 450ºF;
b) c) introducing a gasoline or diesel fuel stream which contains an oxygenate into said nickel reactant desulfurization station; and
c) d) said oxygenate being present in said fuel stream in an amount which is effective to provide a continuous fuel stream at an exit end of said nickel reactant station which continuous fuel stream contains on average no more than about 0.05 ppm by weight sulfur.

10.(currently amended) A method for desulfurizing a gasoline or diesel fuel stream so as to convert the fuel stream into a low sulfur content fuel, which low sulfur content fuel is suitable for use in an internal combustion engine, said method comprising the steps of:
a) providing a nickel reactant desulfurization station which is operative to convert sulfur contained in organic sulfur compounds contained in the fuel stream to nickel sulfide;
b) maintaining said nickel reactant desulfurization station at a temperature in the range of about 300ºF to about 450ºF;
b) c) introducing a gasoline or diesel fuel stream which contains an oxygenate into said nickel reactant desulfurization station; and
c) d) said oxygenate being converted to isobutylene and methanol by said nickel catalyst in amounts which are effective to inhibit carbon deposition in said nickel catalyst station and provide a continuous fuel stream at an exit end of said nickel reactant station which continuous fuel stream contains no more than about 0.05 ppm by weight sulfur.

11.(currently amended) A method for desulfurizing a gasoline or diesel fuel stream so as to convert the fuel stream into a low sulfur content fuel, which low sulfur content fuel is suitable for use in an internal combustion engine, said method comprising the steps of:
a) providing a nickel reactant desulfurization station which is operative to convert sulfur contained in organic sulfur compounds contained in the fuel stream to nickel sulfide;

b) maintaining said nickel reactant desulfurization station at a temperature in the range of about 300ºF to about 450ºF;

b) c) introducing a gasoline or diesel fuel stream which contains an oxygenate into said nickel reactant desulfurization station, said oxygenate being present in said fuel stream in an amount which is effective to provide a low sulfur content fuel stream at an exit end of said nickel catalyst station which low sulfur content fuel stream contains no more than about 0.05 ppm by weight sulfur; and

c) d) said oxygenate being converted to isobutylene and methanol by said nickel reactant during said desulfurizing step, said low sulfur content fuel stream being formed so long as said nickel reactant continues to convert the oxygenate.

12.(original) A method for desulfurizing a liquid gasoline or diesel fuel stream so as to convert the fuel stream into a low sulfur content fuel, which low sulfur content fuel is suitable for use in an internal combustion engine, said method comprising the steps of:

a) providing a nickel reactant desulfurization station which is operative to convert sulfur contained in organic sulfur compounds contained in the fuel stream to nickel sulfide;

b) maintaining said nickel reactant desulfurization station at a temperature in the range of about 300ºF to about 450ºF;

c) introducing a liquid gasoline or diesel fuel stream which contains an oxygenate into said nickel reactant desulfurization station, said oxygenate being present in said fuel stream in an amount which is effective to provide a low sulfur content fuel stream at an exit end of said nickel reactant station which low sulfur content fuel stream contains no more than about 0.05 ppm by weight sulfur; and

d) said oxygenate being converted to isobutylene and methanol by said nickel reactant during said desulfurizing step, said low sulfur content fuel stream being formed so long as said nickel reactant continues to convert the oxygenate.

13.(canceled)

14.(canceled)

15.(canceled)

16.(canceled)

17.(canceled)

18.(canceled)